TIMET
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Ohio EPA
Division of Industrial Wastewater
1800 Water Mark Drive
Columbus, Ohio 43266-0149

Attn: Mr. John Sadzewicz, Section Manager
Public Wastewater Section

Dear John:

The following is the written text, requested by your office, of Timet's comments on its Fundamentally Different Factors Variance request as well as a summary of significant matters discussed on September 8, 1989 in our Columbus meeting.

Timet believes it is entitled to a variance for a number of reasons each of which standing alone requires that such a variance be issued by OEPA.

First, Timet will be required to spend more on controls for just the Toronto mill than the EPA estimated would be spent on BAT controls by the entire titanium industry. In addition, these controls will provide virtually no environmental benefit. Only fluoride will be removed and it will be lowered from approximately the drinking water standard to 1/4 the drinking water standard.

Second, these controls will remove no priority pollutants. Timet does not use or process lead, copper, zinc or cyanide.

Third, these controls will not be able to achieve compliance with BAT based fluoride permit limits. BAT does not work for Timet's Toronto mill because it is fundamentally different from the plants studied by USEPA.

There are three major reasons why Timet's Toronto mill is fundamentally different from the factors used in developing the Effluent Guidelines: (1) The age, size, land availability and configuration as they relate to Toronto's equipment and facilities; processes employed; process changes; and engineering aspects of the application of control technology are significantly dissimilar from the EPA model plants used to establish the Effluent Guideline

limitations. (2) The nature and quality of pollutants contained in the untreated process wastewater are different from those studied by USEPA. (3) The cost of compliance is wholly out of proportion with and fundamentally different from the removal cost considered during the development of the Guidelines.

Each of the above was addressed separately in Timet's application and during our recent meeting with you in Columbus.

AGE, SIZE, LAND AVAILABILITY AND CONFIGURATION

The Toronto Plant's fundamentally different characteristics may not have previously been made clear enough to the OEPA and this may have resulted in some confusion concerning the variance application. The OEPA had stated that only three waste streams need to be controlled to meet the BAT fluoride limits. Timet showed at the Columbus meeting that even using BAT treatment and maximum flow reduction on all of its waste streams will not achieve proposed fluoride limits.

It was also Timet's understanding that the OEPA believes that a reconstruction of the process water sewer system and removal of existing structures to build a treatment plant is not needed to meet BAT. Timet demonstrated that, at a minimum, the entire process water sewer system will need to be rebuilt, existing structures must be removed for a treatment plant and, even then, consistent compliance would not be achieved.

Timet made its demonstration by first showing what BAT fluoride limits are and how they were determined. There followed a discussion on what BAT treatment is and what the regulated processes are. This information was then used to show why control of even all Toronto processes cannot achieve compliance since Timet is fundamentally different.

A comparison of fluoride limits was made. The present permit has a limit of 192.2 kilograms per day daily maximum and 85.3 kilograms per day monthly average. The proposed permit would have a daily limit of 29.1 kilograms per day daily maximum and 12.9 kilograms per day monthly average which are approximately 15% of the present limits.

The average level discharged by Toronto in 1988 was 66 Kg/day daily maximum and 66 Kg/day monthly average. If the proposed permit was in effect, Timet would have exceeded the daily limit 37 out of 52 times in 1988 and the monthly limit 12 out of 12 times.

In 1989, after significant changes in the plant work practices which are still continuing, these levels were reduced to 38 and 37 kilograms per day respectively. Even with these improvements the number of excursions under the proposed BAT permit would have been 20 out of 36 times for the daily and all 7 out of 7 months for the monthly so far in 1989.

Timet explained during the Columbus meeting that to have a system which would provide compliance with permit limits at all times, the design criteria of that treatment plant should be 80% of the permit limit. In other words, the plant must be designed to discharge a daily maximum of 23.3 Kg/day of fluoride and a monthly average of 10.3 Kg/day.

A discussion followed as to how discharge limits are determined by making the following calculation for a given pollutant and for each process.

Process A Gals/Day	X	Treatment Effectiveness mg/Liter	=	Discharge For Process A Kg/Day

Total permitted discharge is the sum of the allowance of all processes going to an outfall.

Also discussed was the question, "What is BAT (lime, settling) treatment effectiveness?" Treatment effectiveness is the chemical efficiency of removal of pollutants. i.e. How many mg/liter of a pollutant will be left in water after treatment. BAT is designed for toxic pollutant removal and as such it is not designed nor is it efficient for fluoride removal. Since Timet has no toxic pollutants and is only concerned with fluoride, BAT is not appropriate or useful.

Table VII-9 on Treatment Effectiveness taken from the Development Document Guidelines was reviewed. This was followed by a list of regulated processes at Timet.

It was shown that Timet actually has 18 regulated processes which were used by the EPA in determining costs. Timet's cost estimate was conservative and based on controlling only 10 processes. The OEPA assumed only 3 processes needed control and based their cost estimate on them. A Table II showing all regulated processes which discharge to outfall 006 was also reviewed.

The only three sewers which the OEPA believed needed control and their flows are as follows:

D&P Line Rinse	105 GPM
Strip Pickle Line Rinse	20 GPM
Sheet & Plate Pickle Rinse	100 GPM
	225 GPM

Timet made the following demonstration that the treatment of only these three sources will not be sufficient to provide permit compliances even with maximum possible flow reductions and that the treatment and flow reduction for all sources will not meet permit limits.

Timet made that demonstration using the following deductions.

Treatment effectiveness taken from the EPA table for fluoride is 23.5 mg/liter.

Total flow of these three sources is 225 GPM.

There discharge of fluoride after treatment is:

Flow	X	Treatment Efficiency	=	29 Kg/Day
225 GPM		23.5 mg/Liter		

After treatment a discharge of 29 Kg/day is still almost 3 times higher than 10.3 Kg/day which is needed for compliance with the proposed BAT limits. If process flows were reduced even more, compliance may not be possible.

A.	80% Reduction	D&P Line	=	25 GPM
B.	20% Reduction	Strip Line Sheet & Plate	=	80 GPM
				105 GPM

The discharge of fluoride after treatment would be

Flow	X	Treatment Efficiency	=	13 Kg/Day
105 GPM		23.5 mg/Liter		

To obtain a 10.3 Kg/Day discharge level total flows from these three sewers would have to be reduced to 80 GPM and there also must be a zero discharge of fluoride from all other sources. It is not possible for this equipment, even with substantial modifications, to operate at 80 GPM. The sheet and plate dip tank needs a high flow! We estimate that the other five sources account for a minimum of 1/3 our fluoride of 12.6 Kg/Day.

At this point in the presentation, a discussion followed as to how well flows can be controlled. Timet

stated that at present the flows from the above processes are in excess of 1000 gallons per minute. It is possible with extensive equipment modification to reduce the flows to the 430 gallons per minute as proposed in our 301C application, but the process equipment at the Toronto mill can never be operated at 80 gallons per minute.

A second point was raised as to what was the appropriate treatment efficiency to use. In Timet's analysis, the 30 day average of 23.5 mg/l was used. The EPA used the 10 day average of 26.4 mg/l, but the OEPA in their analysis used the mean number of 14.5 mg/l. Timet explained that the mean number only represented the value which is achieved 50 percent of the time. A facility designed around the mean value would be out of compliance 50 percent of the time. The correct number to use would have been as the EPA did in their determination of the 10 day average. Timet took a slightly more conservative appraisal and used the 30 day average.

In order to meet fluoride limits, all sources of fluoride must be treated. A list of the sewers and flows are:

*Strip Pickle Line		
Rinse	20 GPM	
Fume Scrubber	5 GPM	
*D&P Line		
Rinse	105 GPM	
Fume Scrubber	5 GPM	
*Sheet Scrubber		
Rinse	90 GPM	
*Sheet & Plate		
Rinse	100 GPM	
KOH Rinse	100 GPM	
Fume Scrubber	5 GPM	
*Forge Pickler Rinse	10 GPM	
Total	430 GPM	(+10)

In order to meet BAT limits, total plant flow would have to be reduced by over 81 percent or 80 GPM x 23.5 mg/Liter = 10.3 Kg/Day. This is in addition to the 50% reduction already proposed. This would entail redesigning of the entire plant sewer system but it is still very unlikely that flows can be reduced by 81% using the existing equipment.

In summary, the OEPA assumption that controlling only three major fluoride sources and use of flow reduction will not enable Toronto to comply with BAT fluoride limits. A rebuilding of the process water sewer system and removing existing structures to build a treatment plant will be the minimum requirements with no guarantee of consistent compliance with BAT limits. This demonstrates that BAT will not work because Timet is fundamentally different.

NATURE AND QUALITY OF POLLUTANTS

The second reason Toronto is fundamentally different concerns the nature and quality of pollutants contained in the untreated process wastewater. It remains Timet's belief and understanding that the primary intent of the BAT Guidelines is to control toxic pollutants. Timet demonstrated that BAT is designed to remove toxic pollutants based on the earlier discussion of treatment effectiveness and two quotes from the Development Document. OEPA believes that Timet's waste streams are not fundamentally different because not all waste streams at all plants studied by USEPA had lead, zinc or cyanide. The significant point here, however, is that not one waste stream at Toronto contains either lead, zinc or cyanide. These pollutants are not used, are not processed, and are not discharged by Timet. Timet should not be required to develop a system to treat them. A Table taken from the Development Document showing by frequency of occurrence of toxic pollutants was shown in the titanium sub-category and appears below as Table II.

COST CONSIDERATIONS

The third reason that Timet is fundamentally different is that the cost of compliance is wholly out of proportion with and fundamentally different from the removal cost considered during the development of the Guidelines.

OEPA believes that the Clean Water Act of 1987 states that cost is not to be considered as a factor for granting a FDF variance and that Toronto's cost of $4 million is not out of proportion to the $5.6 million for the entire industry.

The Clean Water Act states that the ability of a company to pay is not to be considered a factor for a FDF variance, but if the cost is wholly out of proportion with that considered by the EPA, then it must be deemed a proper basis for an FDF variance.

As discussed above, expenditures of even $4 million is still too low to meet BAT. There are 41 plants in this category and Timet believes that the cost of one plant at $4 million is out of proportion with proposed total industry impact of 5.6 million.

The EPA surveyed 41 plants which form titanium of which 27 plants discharge process water; 11 plants are direct discharges; 15 plants discharge to POTW and 1 plant discharges direct and to POTW.

A copy of page 389 of the Development Document from which this information was taken is enclosed as Table III.

The cost is wholly out of proportion with what was considered by EPA. The Ohio EPA estimate on number of plants is 13, which corresponds to an average cost of $430,000 per plant for treatment of all processes for all pollutants.

The EPA states that there are 27 plants which discharge. This corresponds to an average cost of $210,000 per plant for treatment of all processes for all pollutants.

Timet calculated its cost at $4,000,000 for treatment of only 10 of 18 processes for a single pollutant. The cost to treat all processes for all pollutants will be considerably higher including an additional outfall.

Timet believes even a factor of 10 using Ohio EPA numbers is wholly out of proportion on costing. The actual factor is much higher.

CONCLUSION

In summary, Timet is fundamentally different because BAT will not work and was not intended to be applied to this plant. BAT would involve a redesign of the entire process sewer system even though no regulated priority pollutants are present and none will be controlled. Finally, the cost of installing expensive BAT is wholly out of proportion with EPA estimates.

Sincerely,

Mark Small Ph.D.

Mark Small, Ph.D.

MS/lk

this subcategory form all of the precious metals using the same equipment and cleaning operations. In addition, the metals are alloyed with each other in many combinations, some of which have no one constituent that is greater than 50 percent of the alloy. As described above, this subcategory also includes production and forming of clad precious metals.

The most common forming operations are rolling and drawing. Extrusion and forging are practiced to a much smaller extent. Fifty of the surveyed plants form precious metals. Thirty-four of these plants discharge process water, six directly to surface water, 27 to a POTW, and one both directly and to a POTW.

Iron and Steel/Copper/Aluminum Metal Powder Production and Metal Powder Metallurgy. This subcategory includes operations for producing metal powders and metal parts from powder for iron, steel, copper, and aluminum. Powders are produced by wet or dry atomization and mechanical grinding. Pressing and sintering, the major manufacturing processes in powder metallurgy, usually use no process water. Most of the wastewater from operations in this subcategory is generated by post-forming surface treatment.

Sixty surveyed plants are engaged in powder production or powder metallurgy of iron, steel, copper, or aluminum. Twenty-three of these plants discharge process wastewater, three directly to surface water and 20 to a POTW.

Titanium Forming. Titanium is formed by rolling, drawing, extrusion, and forging. Forging is practiced by many plants, many of which primarily forge steel. Rolling is the second most common forming operation, drawing the least. Titanium is often acid etched to remove a hard surface layer which forms at elevated temperatures.

Forty-one of the surveyed plants form titanium. Twenty-seven of these plants discharge process wastewater, 11 directly to surface streams, 15 to a POTW, and one both directly and to a POTW.

Refractory Metal Forming. This subcategory includes processes used to form molybdenum, tungsten, vanadium, rhenium, tantalum, and columbium. The Agency believes that it is unnecessary to subcategorize by the individual refractory metals. The metals are processed and fabricated by similar methods because of their common characteristics. The end product of refining these metals is metal powder which is consolidated into finished products or mill shapes. Only production of metal powders, ferrous and nonferrous, in operations which do not significantly increase their purity are included in this category. Production of nonferrous metals powders in operations which significantly increase their

Table VII-9

SUMMARY OF TREATMENT EFFECTIVENESS (mg/l)

Pollutant Parameter	L&S Technology System				LS&F Technology System			
	Mean	One-Day Max.	10-Day Avg.	30-Day Avg.	Mean	One-Day Max.	10-Day Avg.	30-Day Avg.
114 Sb	0.70	2.87	1.28	1.14	0.47	1.93	0.86	0.76
117 Be	0.30	1.23	0.51	0.49	0.20	0.82	0.34	0.32
118 Cd	0.079	0.34	0.15	0.13	0.049	0.20	0.08	0.08
119 Cr	0.084	0.44	0.18	0.12	0.07	0.37	0.15	0.10
120 Cu	0.58	1.90	1.00	0.73	0.39	1.28	0.61	0.49
121 CN	0.07	0.29	0.12	0.11	0.047	0.20	0.08	0.08
122 Pb	0.12	0.15	0.13	0.12	0.08	0.28	0.13	0.11
124 Ni	0.74	1.92	1.27	1.00	0.22	0.55	0.37	0.29
126 Ag	0.10	0.41	0.17	0.16	0.07	0.29	0.12	0.10
128 Zn	0.33	1.46	0.61	0.45	0.23	1.02	0.42	0.31
Al	2.24	6.43	3.20	2.52	1.49	6.11	2.71	2.41
NH3	32.2	133.3	58.6	52.1	32.2	133.3	58.6	52.1
Co	0.05	0.21	0.09	0.08	0.034	0.14	0.07	0.06
F	14.5	59.5	26.4	23.5	14.5	59.5	26.4	23.5
Fe	0.41	1.20	0.61	0.50	0.28	1.20	0.61	0.50
O&G		20.0	12.0	10.0		10.0	10.0	10.0
TSS	12.0	41.0	19.5	15.5	2.6	15.0	12.0	10.0
Nb*	0.5	20.5	0.91	0.86	0.167	0.69	0.3	0.28

*The following pollutants are limited at the same concentrations: Hf, Mg, Mo, Ta, Ti, W, U, V, and Zr.

REGULATED PROCESS OUTFALL 006

	EPA	TIMET	OEPA
SPENT BATHS			
D-P LINE	X		
STRIP PICKLE LINE	X		
SHEET SCRUBBER	X		
SHEET & PLATE	X		
RINSE BATHS			
D-P LINE	X	X	X
STRIP PICKLE LINE	X	X	X
SHEET SCRUBBER	X	X	X
SHEET & PLATE	X	X	
WET AIR POLLUTION CONTROL			
D-P LINE	X	X	
STRIP PICKLE LINE	X	X	
SHEET & PLATE	X	X	
MOLTEN SALT RINSE	X	X	
SAWING GRINDING CONTACT			
NO. 1 ABRASIVE SAW	X		
NO. 2 ABRASIVE SAW	X		
FORGING PRESS HYDRAULIC FLUID			
BAR FORGING MACHINE	X		
TOTAL	15	8	3
003			
FORGE PICKLE SPENT BATH	X	X	
FORGE PICKLE RINSE	X	X	
2500 TON PRESS HYDRAULIC	X		
	18	10	3